

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 November 2003 (27.11.2003)

PCT

(10) International Publication Number
WO 03/097425 A1

- (51) International Patent Classification⁷: **B61L 27/00**, (74) Agent: **BALDWIN, SHELSTON, WATERS**; 60 Margaret Street, Sydney, NSW 2000 (AU).
G09D 1/00
- (21) International Application Number: **PC17/AU03/00605** (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: **20 May 2003 (20.05.2003)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data: **PS 2410** **20 May 2002 (20.05.2002)** **AU**
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BF, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (*for all designated States except US*): **TMG INTERNATIONAL HOLDINGS PTY LIMITED** [AU/AU]; Level 7, 1-9 Chandos Street, Crows Nest, NSW 2065 (AU).
- (72) Inventors; and
(75) Inventors/Applicants (*for US only*): **PUDNEY, Peter, John** [AU/AU]; 111 Seaview Road, Yatala Vale, SA 5126 (AU). **HOWLETT, Philip, George** [AU/AU]; 3 Golf Drive, Fairview Park, SA 5126 (AU).
- Published:
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: SCHEDULING METHOD AND SYSTEM FOR RAIL NETWORKS

(57) Abstract: The present invention provides a method and system for calculating a plan for moving trains on a network that reduces the cost of delays or late running. The invention is useful for timetable development, for real-time dynamic rescheduling of the trains on a network, and for assessing proposed changes to network infrastructure. A method of moving a given set of trains from their respective origins to their respective destinations, said method comprising the steps of: (i) form a schedulable set of trains consisting of all trains not at their destination that have at least one unoccupied link; (ii) from this schedulable set select the train with the earliest start time from its current location, wherein this selected train is travelling from station S_i to station S_j; (iii) form a contender set of trains consisting of all trains that have as their next move a dispatch from station S_i to S_j and vice-versa; (iv) from this contender set select the train with the earliest arrival time at its successor station (either station S_i to S_j); (v) for the selected train invoke a deadlock avoidance procedure wherein if this procedure accepts the train then go on to step (iv), or if the train is rejected then remove it from the schedulable set, and if the schedulable set is not empty then return to step (ii) otherwise go to step (vii); (vi) schedule the selected train over its chosen link to its successor; and (vii) return to step (i) until all trains are at their destination or the schedulable set is empty.

WO 03/097425 A1